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Via Electronic Filing

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

**Re: GN Docket Nos. 12-268 and 14-166 and ET Docket No. 14-165
Ex Parte Filing of the Wireless Microphone Stakeholder Group**

Dear Ms. Dortch:

On June 10, 2015, representatives from multiple wireless microphone stakeholders, including various wireless microphone user groups, met with FCC staff from the Office of Engineering and Technology and the Wireless Telecommunications Bureau to discuss the above-captioned proceedings. In attendance were:

Wireless Microphone Stakeholders: Joe Ciaudelli, Sennheiser Electronics Corporation; Mark Brunner, Shure Incorporated; Catherine Wang, Morgan Lewis & Bockius, LLP (counsel to Shure); Howard Kaufmann, Lectrosonics; Laurie Baskin, Director of Research, Policy & Collective Action, Theatre Communications Group; Peter Schneider, Gotham Sound & Communications, Inc.; Brooks Schroeder, The Frequency Coordination Group; Otts Munderloh, sound designer; Bob Goldstein, Maryland Sound International; Todd Dupler, Director of Government Relations, The Recording Academy; Geoff Sherring, Masque Sound; Peter Hylenski, Peter Hylenski Sound Design; and the undersigned.

FCC Staff: Julius Knapp, Ira Keltz, Geraldine Matise, Paul Murray, Hugh Van Tuyl, Serey Thai, John Leibovitz, John Schauble, Simon Banyai, Stephen Buenzow (via teleconference), and Chris Andes (via teleconference).

The wireless microphone stakeholder group explained that the users in the group represent a large and important segment of professional users of wireless microphones, including frequency coordinators and producers for the Broadway theater district, touring theater and music concerts, not-for-profit regional and community performing arts, large houses of worship, various TV series, and iconic media events such as the Grammy Awards, Lollapalooza, the New Year's Eve Times Square celebration, political campaigns, and major corporate conferences, among many other events. These "power" users explained how the pending incentive auction and subsequent reallocation of UHF spectrum will detrimentally affect their operations and the industry segments that they serve. In particular, the users highlighted the following points:

- Wireless microphone use is varied and not static, and the required number of channels in any one location at any one time cannot easily be predicted. For example, one reality TV series uses 64 microphone channels, regional theaters use 30-35 channels for musical productions, and adjacent theaters on just one block of Broadway collectively use over 200 channels during performance times, while 1300 wireless microphones operate within an eight block radius. Similarly, a convention center may have an event that requires tens of microphone channels one week, but 400 microphone channels the following week, depending on the requirements of the particular conference. What is known is that large national events (the Super Bowl, Grammy Awards) currently require all available spectrum for the duration of the event, including, spectrum authorized for use through special temporary authority ("STA"), in bands such as 700 MHz and 1.4 GHz. This is true even when frequency coordinators maximize the number of available channels through frequency re-use.
- Many microphone applications can operate in ranges outside UHF, but some cannot. A "suite" of UHF spectrum must remain available post auction for microphone operations. Loss of UHF available to microphones should be mitigated by providing access to a combination of the naturally occurring white space in each market for licensed and unlicensed wireless microphone use, channel 37 and adjacent guard bands, the duplex gap, and the lower guard band (notwithstanding some interference from LTE signals), channels available through retention of the rules that prohibit portable white space devices ("WSDs") to operate below Channel 21 and prevent high power fixed WSD use on channels adjacent to assigned TV channels.
- Spectral efficiency has been and will continue to be driving design criteria for wireless microphone equipment, as demonstrated by the new product launches by the microphone manufacturers in recent years. Ensuring that known, clean spectrum is available is critical to continuing advances in improved spectral efficiency. However, demand for content creation is growing, as is the trend in increasingly more sophisticated arts productions and higher-resolution audio formats. Even productions that do not require "surge level" numbers of microphone channels will be unable function with significantly less spectrum.

- The current UHF reserve microphone channels make frequency planning more efficient and frequency use more reliable. The current prohibition on portable WSDs below Channel 21 similarly provides reliable and clean spectrum. “Mission critical” microphones require this sort of reliable spectrum.
- Wireless microphones should not be regulated like white space devices. They are very different devices with different purposes. Wireless microphones must work flawlessly without interruption during performance times and demand for channels may change in an instant. Database control of wireless microphones would reduce reliability, disrupt established work flow methods, add complexity to equipment design, and be logistically difficult because microphones are often operated indoors where GPS may not be available. The stellar history of peaceful co-existence between wireless microphones and primary incumbent services begs the question of what benefits would be achieved by database control of wireless microphones.
- Unlicensed wireless microphone users that are civic and arts groups engaged in professional performances – symphonies, operas, ballet companies, theaters, etc. – must have access to the same database registration protection as Part 74 licensees. The group requested that the FCC retain the existing registration process for unlicensed wireless microphones. Without registration protection, these organizations would be hard pressed to present performances without multiple RF interference events that would result in serious degradation in sound, direction, and audience experience. The existing rules that limit license and database eligibility for Part 74 licenses to users that routinely use 50 or more microphones arbitrarily excludes many important, professional uses of wireless microphones from registration protection. The Commission must use a different measure for database protection that is not based on the arbitrary number of microphones routinely used.
- Given that many wireless microphone users were recently required to make significant investments in new equipment in order to comply with the Commission’s 2010 order clearing wireless microphones from the 700 MHz band, and no alternative or supplemental spectrum will be available in the near future, wireless microphone users should be permitted to use their equipment on auctioned 600 MHz frequencies for the longest period possible before wireless carriers commence actual service using repurposed 600 MHz spectrum. “Commencement of service” by broadband providers should be defined and tied to the date the public is billed for broadband service in order to maximize access of spectrum to microphones during the transition period.
- Grandfathering must be allowed for equipment currently in the field that can tune to lawful UHF frequencies. During the 700 MHz transition period, wireless microphone users were encouraged to purchase equipment using 600 MHz frequencies, and in some instances on 600 MHz frequencies below Channel 21 in order to avoid portable WSDs. They were compelled to discard perfectly operable equipment and invest millions of dollars in new equipment. Many, such as non-profit community and regional theaters, faced difficulty raising money for that equipment, and will face extreme difficulty fundraising for new equipment that does not even provide better performance quality. The Commission must allow this equipment to be used to the extent that it can be. Professional wireless microphone users seek clear spectrum and, through a variety of

readily available spectrum analysis tools will avoid other users, as they have done for decades.

- The field strength benchmark of -80 dB should be substituted for the proposed 4 km separation distance for co-channel operation. Wireless microphone receivers designed for UHF are equipped to make these measurements, with receiver sensitivity so high as compared to other receivers (such as televisions) that this threshold will be detected.

Please direct any questions to the undersigned.

Respectfully submitted,



Laura A. Stefani
Counsel for Sennheiser Electronic Corp.

cc: Julius Knapp
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Geraldine Matise
Paul Murray
Hugh Van Tuyl
Serey Thai
John Leibovitz
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